

## Georgia State University STEM Grant Abstract

Georgia State University (GSU) serves over 50,000 students from over 160 countries and offers more than 300 degree and certificate programs in over 100 fields of study, as well as associate degrees in over 30 areas of concentration. There are six campuses: Alpharetta, Atlanta, Clarkston, Decatur, Dunwoody, and Newton, as well as online. To meet the objectives outlined in GSU's CCG goal of improving institutional graduation rates, the STEM Education Improvement Plan will focus on the following strategies.

Contacts: Dabney Dixon Coordinator of STEM Ed. Initiatives; Prof. of Chemistry, [ddixon@gsu.edu](mailto:ddixon@gsu.edu); Cynthia Lester, Executive Director, STEM, PC; Assoc. Prof. of CS, [clester6@gsu.edu](mailto:clester6@gsu.edu); Renee' Schwartz, Assoc. Prof., Middle and Secondary Education, CEHD; [rschwartz@gsu.edu](mailto:rschwartz@gsu.edu)

**Algebra Means Progress (AMP).** The objective of the AMP project is to increase success rates in STEM gateway math courses by using preparedness and self-remediation software. The AMP project will utilize specific modules to assess student preparedness on course concepts and depending on the result, allow students the opportunity to self-remediate while taking the course. This will not only allow students the opportunity to recall information that they may have forgotten but will also reduce the amount of time that faculty spend on reviewing prerequisite material, thereby permitting class time to be spent on course topics. Faculty will work in concert to develop the modules to ensure consistency in course topics taught and academic preparedness of students in gateway math classes across the university. By developing modules instead of utilizing already existent software, the dependency on software tied to specific textbooks and publishers is removed, modules can be easily updated and revised for future use and used by other USG institutions, and the cost associated with purchasing "off-the-shelf" packages is not passed on to the student or incurred by the university.

Contacts: Timothy Brown Chair, Mathematics, PC, [tbrown179@gsu.edu](mailto:tbrown179@gsu.edu); Valerie Miller, Assoc. Prof., Mathematics, A&S, [vmiller@gsu.edu](mailto:vmiller@gsu.edu)

**The MESA Center** is an academic-based center designed to help scholars excel in STEM by providing access to technology and opportunities for peer support and information-sharing. Students utilizing the Center have access to STEM-related workshops, academic excellence workshops, peer-tutoring, state-of-the-art software and printing, and group study facilities. The goal is to continue MESA's success of impacting first-generation college students and those who have traditionally been underrepresented in STEM through targeted retention and advising efforts.

Contact: Diana McGinnis, Instructor, Mathematics, PC, [dmcginnis@gsu.edu](mailto:dmcginnis@gsu.edu)

**Summer Success Academy.** GSU works toward providing a quality education for a broad variety of students. The Summer Success Academy is a multiple semester initiative for at-risk students working toward the bachelor's degree. The Success Academy is designed to support students academically and socially through their college transition and integrate them into university requirements and expectations by providing the necessary academic and social support. Success Academy students have a prescribed co-curricular program for the summer, fall and spring semesters.

Contact: Nikolas Huot, Assoc. Dir. of Student Success, [nhuot1@gsu.edu](mailto:nhuot1@gsu.edu)

**Learning Assistants in STEM.** Peer mentors can be very effective in helping students master STEM material. Pilot students in Physics I and II as well as in Organic Chemistry I and II have been very successful. These are in line with extensive national studies which have shown that interactive engagement in class leads to significant learning gains. Our goal is to revamp the Organic I and II programs to fit into the current three-credit hour format, support the expansion of this effort in Physics, and extend the model to Calculus for the Life Sciences.

Contacts: Brian Thoms, Associate Chair, Ugrad. Advisor Physics, A&S, [bthoms@gsu.edu](mailto:bthoms@gsu.edu); Suazette Mooring, Assist. Prof., Chemistry, A&S; [smooring@gsu.edu](mailto:smooring@gsu.edu); Joan Mutanyatta-Comar, Sr. Lecturer & Undergrad. Co-Director, Chemistry, [jmutanyattacomar@gsu.edu](mailto:jmutanyattacomar@gsu.edu)

**Supplemental Instruction (SI)** is a voluntary academic assistance program that utilizes peer-assisted study sessions; it is offered without charge to all students in a targeted course. It is a non-remedial approach to learning, targeting high-risk courses rather than high-risk students. SI Leaders are students who have previously done well in the course and can share relevant information, course content and study skills with other students. SI Leaders act as model students by attending all class lectures and taking notes. They then hold SI sessions which are regularly-scheduled, informal review sessions in which students compare notes, discuss readings, develop organizational tools, and predict test items. SI leaders also work with the faculty to ensure that the content they are preparing for sessions is in the line with the professor's content from lectures. The purpose of the SI program is to increase retention and student grades in historically difficult courses.

Contact: La'Twan Roddey, Administrative Coordinator, Supplemental Instruction, [lroddey@gsu.edu](mailto:lroddey@gsu.edu)

**STEM Tutoring.** We propose to create additional STEM Centers that provide tutorial resources for our students. Tutoring can be an effective way of supporting students in their studies. Our goals are to expand the current model of the STEM Center at Decatur to the Clarkston and Newton campuses and increase the space and number of tutor hours available at the Atlanta campus.

Contacts: Mary Hamilton, Assoc. Dir. of Student Success, [mhamilton@gsu.edu](mailto:mhamilton@gsu.edu); Dabney Dixon Coordinator of STEM Ed. Initiatives; Prof. of Chemistry, [ddixon@gsu.edu](mailto:ddixon@gsu.edu); Cynthia Lester, Executive Director, STEM, PC; Assoc. Prof. of CS, [clester6@gsu.edu](mailto:clester6@gsu.edu)

**Paths to STEM Career Success.** To address the goal of putting more Georgians on a pathway to success, we propose to enhance our work in training STEM students for entrance into the workforce by providing additional Course-based Undergraduate Research Experience options (CUREs). These Signature Experiences in research teaches students to problem-solve, a necessary skill when the answers to a question are unknown. Through research, students gain the personal and professional skills they need to succeed. In addition, students who have some research experience are by far the most effective peer mentors for up-coming students. In A&S, access to undergraduate research is currently limited to fewer than 10% of the STEM majors due both to the large size of the undergraduate population and to the limited number of tenure-track faculty with research support. On the Perimeter campus, only a handful of students has the opportunity to pursue research. Perimeter College will offer a new themed-based course during the Maymester. Arts and Sciences will create CURES of approximately 15 students under the guidance of a faculty member. Faculty members include a) non-tenure-track (NTT) faculty with research projects of their own, b) NTT faculty who are working in concert with a funded tenure-track (TT) faculty member to advance the agenda of that research, and c) currently unfunded tenure-track faculty members who want to continue research in their field.

Contacts: Pamela Leggett-Robinson, Chemistry, PC, [pleggett1@gsu.edu](mailto:pleggett1@gsu.edu); Paul Ulrich, Lecturer, Biology, A&S, [pulrich@gsu.edu](mailto:pulrich@gsu.edu)